A549 CELLS: LUNG CARCINOMA CELL LINE FOR ADENOVIRUS

SUMMARY

Scientists at the National Cancer Institute have developed a cell line designated A549 that was derived from explanted cultures of human lung cancer tissue. The A549 cell line has been tested under the guidance of the United States Food and Drug Administration (FDA) so, under current Good Manufacturing Practices (GMP), these cells may be suitable for use in manufacturing constructs for use in clinical trials. The National Cancer Institute seeks parties to non-exclusively license this research material.

REFERENCE NUMBER

E-129-2009

PRODUCT TYPE

- Research Materials

KEYWORDS

- A549, human lung cancer, adenovirus

COLLABORATION OPPORTUNITY

This invention is available for licensing.

CONTACT

John D. Hewes
NCI - National Cancer Institute
240-276-5515

John.Hewes@nih.gov

DESCRIPTION OF TECHNOLOGY

Scientists at the National Cancer Institute developed a cell line designated A549 that was derived from explanted cultures of human lung cancer tissue. The A549 cell line has been tested under the guidance of the United States Food and Drug Administration (FDA) so, under current Good Manufacturing Practices (GMP), these cells may be suitable for use in manufacturing constructs for use in clinical trials. The A549 cell line has also been found to be suitable for adenovirus production, most notably replicating adenovirus constructs that do not require complementation by the viral oncogene, early region 1A (E1A), which is responsible for viral gene transcription. This cell line is further utilized as a negative control in assays to measure the replication of adenoviruses that lack E1A and as a target cell line to detect replication competent adenoviruses (RCA). A549 cells have been well characterized through their use in a wide variety of molecular studies, such as anti-tumor drug permeability and efficacy analysis, infection

assays, respiratory immunotoxicity tests, cell senescence studies, and cytokine expression profiling. These cells can also be utilized to study a variety of molecular characteristics for human tumors in culture.

POTENTIAL COMMERCIAL APPLICATIONS

- Cell bank tested under cGMP-compliance regulations and used to produce adenoviruses for use in clinical trials
- Research tool to analyze the efficacy of potential anti-cancer agents to devise better cancer treatments for malignancies, such as non-small cell lung cancer (NSCLC)
- Research tool to study the infectivity of viruses that cause asthma in order to develop better asthma treatments
- Standard research tool to analyze a variety of molecular biology procedures, for example, cell senescence, cytokine induction, protein expression, apoptosis, and receptor-ligand interactions

COMPETITIVE ADVANTAGES

- A549 cells are a well-characterized standard among the human lung carcinoma/alveolar cell lines used in molecular biology.
- The A549 cells stored at the NIH were tested under the guidance of the FDA's cGMP regulations and may be suitable for producing adenoviruses that can be used in clinical trials and analyzing adenoviral-based therapies and vaccine strategies.

INVENTOR(S)

Wade Parks (formerly NCI)

Stuart Aaronson (NCI)

Donald Giard (NCI)

DEVELOPMENT STAGE

- Basic (Target Identification)

PUBLICATIONS

DJ Giard et al. In vitro cultivation of human tumors: establishment of cell lines derived from a series of solid tumors. J Natl Cancer Inst. 1973 Nov;51(5):1417-1423.

PATENT STATUS

- **Not Patented:** Research Tool -- patent protection is not being pursued for this technology

THERAPEUTIC AREA

- Cancer/Neoplasm